

**WHAT IS CLAIMED:**

- 1    1. A method of surveillance, which method comprises:
  - 2       assaying a sample derived from materials collected from a sample domain for the presence of a chemical, biological, or radiological agent,
  - 3       wherein the sample domain comprises at least one collection point from which the materials are collected in a pre-existing operation, unrelated to surveillance.
- 1    2. The method of surveillance of claim 1, wherein the sample domain comprises a route undertaken by a street sweeper machine.
- 1    3. The method of surveillance of claim 2, wherein the materials are collected in a predetermined, traceable route.
- 1    4. The method of surveillance of claim 2, wherein the sample is assayed for *Bacillus anthracis*, and *Tetrahymena pyriformis* is introduced to the sample
- 1    5. The method of surveillance of claim 1, wherein the sample is assayed for *Bacillus anthracis* using real time polymerase chain reaction (RTm-PCR).
- 1    6. The method of surveillance of claim 2, wherein the sample is derived from a street sweeper machine.
- 1    7. The method of surveillance of claim 6, comprising obtaining a sample from a collection bin, and assaying the sample.
- 1    8. The method of surveillance of claim 7, comprising placing an assaying device in communication with the collection bin.
- 1    9. The method of surveillance of claim 7, wherein the sample is derived from rinsing collection bins that collect refuse from the street sweeper machine.
- 1    10. The method of surveillance of claim 1, wherein the sample is derived from collection bins washed with water.

- 1      11. The method of surveillance of claim 1, wherein the materials are collected in a  
2                    predetermined pattern, and brought to a central location.
- 1      12. The method of surveillance of claim 1, wherein assaying for the presence of a chemical,  
2                    biological, or radiological agent comprises comparing a level of chemical, biological or  
3                    radiological agent to a normal level of a chemical, biological or radiological agent.
- 1      13. The method of surveillance of claim 12, wherein the normal level of a chemical,  
2                    biological or radiological agent comprises background noise.
- 1      14. The method of surveillance of claim 12, wherein the normal level of a chemical,  
2                    biological or radiological agent is ascertained from a second sample domain.
- 1      15. The method of surveillance of claim 1, wherein assaying for the presence of a chemical,  
2                    biological, or radiological agent comprises detecting an increase in a level of chemical,  
3                    biological or radiological agent relative to an earlier assay.
- 1      16. The method of surveillance of claim 1, wherein assaying for the presence of a chemical,  
2                    biological, or radiological agent comprises detecting a decrease in a level of chemical,  
3                    biological or radiological agent relative to an earlier assay.
- 1      17. The method of surveillance of claim 1, wherein assaying for the presence of a chemical,  
2                    biological, or radiological agent comprises introducing *Tetrahymena pyriformis* to the  
3                    sample.
- 1      18. The method of surveillance of claim 17, wherein the sample is assayed for *Bacillus*  
2                    *anthracis*.



11 (d) reporting the result.

1 27. The method of surveillance of claim 26, wherein collection integrity is preserved.  
1 28. A system for surveillance for chemical, biological, or radiological agents, which method  
2 comprises:

3 a sampling means for obtaining samples from collection points from which the materials  
4 are collected in a pre-existing operation, unrelated to surveillance; and  
5 an assaying means, for determining the presence of a chemical, biological, or  
6 radiological agent in the sample from the sample domain.

1 29. A method for determining the presence of a *Bacillus* spore within a sample comprising  
2 introducing *Tetrahymena pyriformis* to the sample, and assaying the sample for the presence  
3 of a *Bacillus* spore.

1 30. The method for determining the presence of a *Bacillus* spore of claim 29, wherein the  
2 *Bacillus* spore is *Bacillus anthracis*.

1 31. The method for determining the presence of a *Bacillus* spore of claim 29, wherein the  
2 *Bacillus* spore is *Bacillus thuringiensis*.

1 32. The method for determining the presence of a *Bacillus* spore of claim 29, further comprising  
2 the step of introducing the sample to a membrane at a temperature effective to kill vegetative  
3 bacteria.

1 33. The method for determining the presence of a *Bacillus* spore of claim 32, wherein the  
2 temperature effective to kill the vegetative bacteria is about 70 °C to about 80 °C.

1 34. The method for determining the presence of a *Bacillus* spore of claim 29, wherein the  
2 sample is introduced to a first membrane having a pore size larger than the *Bacillus* spore,  
3 and a second membrane having a pore size smaller than the *Bacillus* spore.

1    35. The method for determining the presence of a *Bacillus* spore of claim 34, wherein the first  
2       membrane and/or the second membrane is at a temperature effective to kill vegetative  
3       bacteria.

1    36. The method for determining the presence of a *Bacillus* spore of claim 35, wherein the  
2       temperature effective to kill the vegetative bacteria is about 70 °C to about 80 °C.